



Kuskokwim River Salmon Situation Report

OCTOBER 2022

Last updated October 3, 2022

Prepared by the Kuskokwim River Inter-Tribal Fish Commission
P.O. Box 190, Bethel, AK 99559
Ph: (907) 574-0388 | F: 1-907-771-9378 | E: info@kritfc.org
Photo courtesy: Jonathan Samuelson.



Introduction

This situation report documents the current Chinook, chum, and coho salmon disasters on the Kuskokwim River and their impacts on the 33 subsistence-dependent communities in its watershed. The aim of the Kuskokwim River Inter-Tribal Fish Commission (KRITFC) in this report is to communicate the magnitude of our subsistence salmon declines and articulate the critical need for a new conservation-based, ecosystem-wide management approach, particularly in the marine environment. These multi-year, multi-species salmon declines threaten food, cultural, spiritual, and economic security in the Kuskokwim drainage, and they demand attention and immediate action by all management entities.

While this report focuses on the impacts of these salmon stock collapses in the Kuskokwim drainage, we are acutely aware of other watersheds in Western and Interior Alaska experiencing the same, if not more severe, declines. Moreover, this situation report is not meant to diminish our gratitude for the fish we have been able to harvest along the Kuskokwim. Rather, it is meant to be an honest documentation of the experiences of our communities during salmon shortages so we can act effectively and equitably to maintain our fishing ways of life for future generations.

About the Kuskokwim River Inter-Tribal Fish Commission

The KRITFC represents the interests of the 33 federally recognized Tribes of the Kuskokwim River in salmon management, research, and monitoring to protect and sustain our salmon fisheries and traditional ways of life. The work of our 27 Tribally appointed Fish Commissioners, 7 Executive Council members, and 5 In-Season Managers uses both our Yupik and Athabascan Dené Indigenous Knowledge and the best available Western science, and centers our values of unity, sharing in abundance and scarcity, respect for all life, and stewardship for our ancestors and future generations.

At A Glance: The Status of Kuskokwim River Salmon Runs, Subsistence Harvests, & Causes of Decline

- 2022 is the **seventh year in a row of successful collaborative salmon management** between KRITFC and the U.S. Fish and Wildlife Service at Yukon Delta National Wildlife Refuge.
- Chinook salmon escapement goals were met in 2022 because of **continued sacrifices and conservation efforts by Kuskokwim subsistence communities**, who only met about **one-third of their long-term Chinook salmon subsistence harvest needs**.
- **Chum salmon returns remain unprecedentedly low** in the Kuskokwim River.
- The sockeye salmon run remains strong, but it is not possible to harvest them in large numbers without impacting declined Chinook and chum salmon populations.
- **2022 is the third year of an alarmingly steep decline of coho salmon.**
- With the coho salmon decline, it becomes clear that **Kuskokwim River communities now face a multi-species salmon collapse**. There appears to no longer be any highly abundant “backup” salmon species to fill unmet food security needs.
- Massive intercept catches of chum salmon occurred in the South Alaska Peninsula area (Area M) commercial salmon fisheries during June 2021 and 2022. The most recent and rigorous genetic analysis of samples from these fisheries showed that **Coastal Western Alaska stocks comprised an average of 57% of the chum salmon harvested in Area M, and nearly 1 million Coastal Western Alaska chum salmon were harvested in the two-year period of 2021 to 2022.**
- While the bycatch of Chinook salmon in the Bering Sea-Aleutian Island pollock fishery has declined, chum salmon bycatch remains high, with **no chum salmon bycatch caps** in place by federal managers.

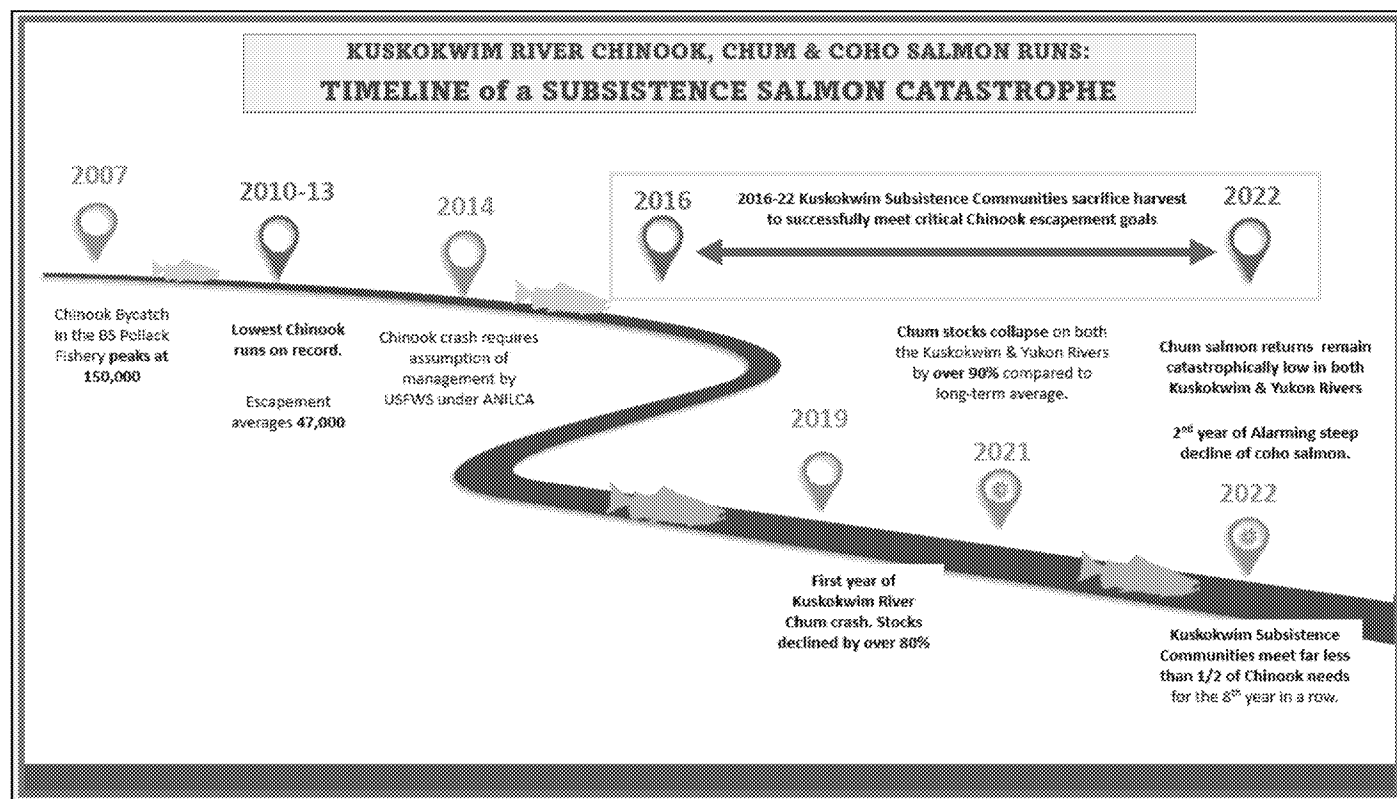


Figure 1: Timeline of a subsistence salmon catastrophe on the Kuskokwim River.

The Multi-Species Salmon Collapse Threatens Our Well-Being & Way of Life

The Kuskokwim River has historically supported the largest subsistence salmon fishery in the State of Alaska, both based on the number of residents in the 33 villages who participate in the fishery and the number of salmon harvested (Fall et al. 2011). With some of the lowest per capita monetary incomes and highest poverty rates in the state, this region is characterized by a high production of wild foods for local use (Wolfe and Walker 1987).

Over the past thirty years, village residents in the Kuskokwim region have annually harvested over 360 pounds of wild foods per person for human consumption, with fish comprising up to 85% of the total poundage of subsistence harvests, and salmon contributing up to 53% of subsistence harvests (Simon et al. 2007; Wolfe et al. 2011). Residents harvest all five species of Pacific salmon: Chinook, chum, coho, pink, and sockeye. Historically, one out of every two Chinook salmon caught for subsistence in the state was harvested by Kuskokwim River communities. In other words, salmon-dependent communities in the Kuskokwim watershed utilize half of all Chinook salmon harvested for subsistence state-wide.

The importance of salmon, particularly Chinook salmon, to residents extends well beyond nutrition and economy to include socio-cultural identities and a way of life (Ikuta et al. 2013). The Indigenous people of the Kuskokwim – from our Yupik communities at the coast to our Upper Kuskokwim Athabascan Dené Tribes of the Interior headwaters – are, have been, and will always be salmon people. Salmon are essential to our physical, economic, cultural, and spiritual wellbeing.

From the late 1970's into the mid-1990's, the Kuskokwim River saw large runs of Chinook, chum and coho salmon, supporting significant commercial fisheries in addition to meeting subsistence needs in much of the watershed.

For example, between 1990 and 1995, an average of over 1.5 million salmon of multiple species were harvested in the commercial fisheries alone (Figure 2).

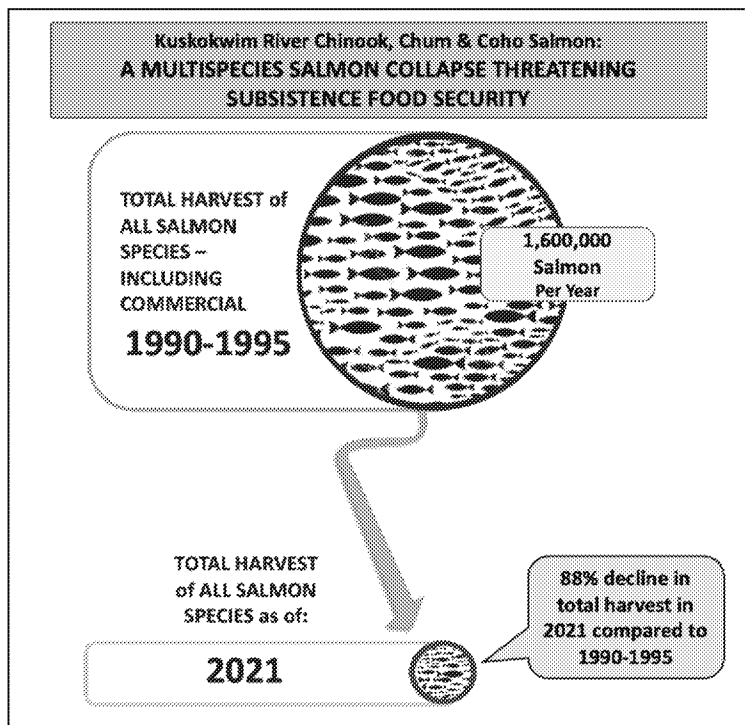


Figure 2: Total subsistence and commercial harvest of all Kuskokwim River salmon species, 1990–1995 compared to 2021.

As of 2022, the Kuskokwim River is experiencing a catastrophic multi-species salmon decline not seen in living memory, and our Elders, youth, and entire communities are suffering because of it. Since at least 2009, subsistence-dependent communities in the Kuskokwim drainage have witnessed steep declines in their salmon populations, beginning with Chinook salmon and now, within the past three years, extending to chum and coho salmon (Figures 1 & 2).

Due to the multi-species nature of the salmon collapse and the complete closure of much of the coho salmon run, the 2022 season was the most restricted subsistence fishing season ever seen on the Kuskokwim.

The State of Alaska Department of Fish and Game (ADF&G) closed all subsistence gillnet fishing in the flowing waters of the Kuskokwim River from August 17 through September 15, including fishing for non-salmon fishes. Because of prolonged conservation closures, subsistence fishing families not only faced salmon harvest restrictions, but also experienced challenges harvesting whitefish and

other non-salmon species that are critical for traditional diets and well-being.

In the recent past, the subsistence harvest of chum and coho could help make up for the absence of Chinook salmon. This was not possible in 2022 with the steep decline of coho salmon on top of the Chinook and chum crashes. And, while sockeye salmon have increased in abundance, it is not possible to target them without potentially overharvesting the declined Chinook and chum populations present in the river at the same time. Kuskokwim River communities are realizing that there is no longer any “backup” salmon species to fill unmet salmon needs, leaving us with a heavy reliance on whitefish, moose, and other subsistence resources, as well as on store-bought foods of significantly less nutritional and cultural value. These current dramatic multi-species salmon declines are thus threatening food security and overall well-being within the Kuskokwim region, as well as the health of our drainage-wide ecosystem.

Impacts of the Prolonged Chinook Salmon Crash (2009–2022)

Since at least 2009, the Chinook salmon (king salmon, *kiagtaq*, *taryaqvak*, *gas*, *Oncorhynchus tshawytscha*) populations in the Kuskokwim River have crashed and remain severely depressed through the 2022 season. Many fishing families in upriver communities, including Nikolai, McGrath, and Takotna, reported Chinook salmon declines dating back to 2000 when average household harvests decreased to approximately half of what they had been in the 1990s.

The preliminary 2022 Kuskokwim River Chinook salmon total run estimate shows a midpoint of about 143,00 fish, and an estimated escapement of about 105,000 fish (though preliminary estimates are considerably uncertain because poor weather prevented aerial surveys) (Rabung 2022). The 2022 estimate is about 41% below the long-

term total run average from 1976 to 2009 (Figure 3). During the run, subsistence-dependent communities were heavily regulated with very few limited harvest opportunities per week and net size and gear restrictions to try to meet the critical escapement goals. As a result of the sacrifices of subsistence users working to rebuild the Chinook salmon stocks, the drainage-wide Chinook salmon escapement goal (65,000–120,000 fish) has been achieved every year that KRITFC and U.S. Fish and Wildlife Service at Yukon Delta National Wildlife Refuge (YDNWR) have collaboratively managed the run, including 2022.

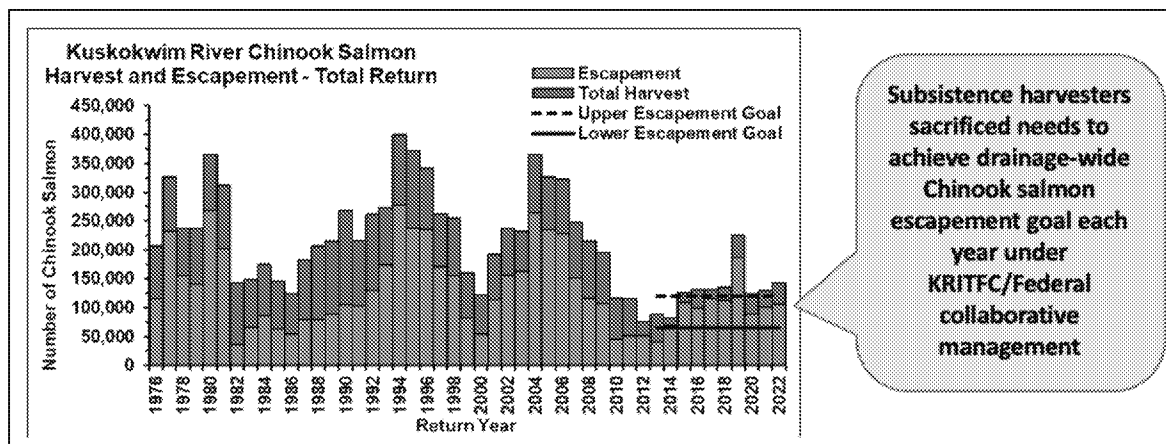


Figure 3: Kuskokwim River Chinook salmon escapement and total harvest by all user groups, 1976–2022. Note: 2022 data is preliminary. Source: Rabung 2022.

Despite Chinook salmon escapement goals being met throughout the period of KRITFC–YDNWR co-management, the Kuskokwim River Chinook salmon run remains concerning because of the inability to maintain expected historic yields, or harvestable surpluses, above the stock’s escapement needs, despite the use of specific management measures. As a result, Kuskokwim River residents have not been able to meet their long-term harvest levels – termed amounts reasonably necessary for subsistence (ANS) by the Alaska Board of Fisheries (BOF) – of 67,200–109,800 fish since 2010 (Figure 4).

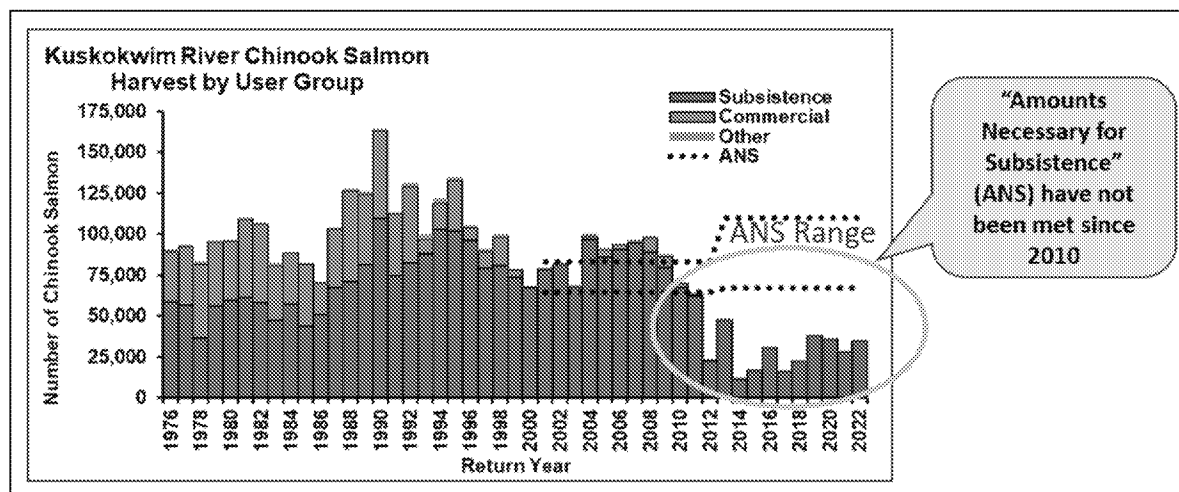


Figure 4: Kuskokwim River Chinook salmon harvest by user groups during 1976–2022, showing that long-term subsistence harvest needs (based on ANS) in the watershed have not been met since 2010. Note: 2022 data is preliminary. Source: ADF&G AYK Database Management System.

While post-season household harvest surveys have yet to be conducted to estimate total salmon harvests during the 2022 season, based upon the in-season community-based harvest monitoring program operated by KRITFC, Orutsararmiut Native Council, and YDNWR, we estimate at this time that residents of the Kuskokwim River met only about one-third of their average long-term Chinook salmon harvest needs. Moreover, as the average size of Chinook salmon returning to the Kuskokwim has decreased, subsistence fishers are not only harvesting fewer numbers of fish but fewer total pounds of fish (Ohlberger et al. 2018). This compounds the food security crisis already unfolding with declined Chinook salmon stocks and restricted harvest opportunities.

“

June 16 was not a good day. Many Kalskag fishermen started at 6:00 am or 8:00 am and fished for eight to ten hours, with a range of zero to five Chinook salmon caught. One person caught ten kings after fishing almost the whole opener. Some are waiting because they can't afford to spend the whole day out for one or two fish. It was a hard day.

Megan Leary, Aniak
(Native Village of Napaimute)

Continued Recent Chum Salmon Crash (2020–2022)

Chum salmon (dog salmon, *aluyak*, *iqalluk*, *neqepik*, *sruqhot'aye*, *O. keta*) have been especially important for food security during years of poor Chinook salmon returns. Because of their lower fat content, they also provide unique traditional foods that cannot be prepared with other salmon species. While chum salmon harvests have declined in recent decades resulting from changes in customary and traditional use patterns, including fewer dog teams in the region, they are highly sought for preparing traditional delicacies like *eggamarrluk* (half-dried, half-smoked salmon) and for Elders and other family members who cannot consume fattier salmon species.

However, in 2020, 2021, and 2022, Kuskokwim chum salmon returns crashed unexpectedly. The 2022 chum salmon run appears to be the second lowest chum salmon return on record, better only than the 2021 return (Figure 5). Chum salmon used to return to middle and headwaters tributaries in the millions, feeding more than just human subsistence users, but bears, vegetation, and other life. The lack of chum salmon in tributary valleys has the potential to significantly affect the health of the Kuskokwim ecosystem.

Moreover, because in-season data showed a weak chum salmon return, Kuskokwim subsistence-dependent communities were restricted from harvesting chum salmon through area and gear type closures. For the second year in a row – and the second year in living memory – subsistence gillnet fishing in the lower Kuskokwim River remained closed through the majority of July, preventing families from being able to efficiently harvest sockeye salmon and non-salmon fish species to store food for the winter.

As a result of this crash and harvest restrictions to meet escapement and conservation goals, subsistence harvests of chum salmon in the Kuskokwim River from 2020 through 2022 have been well below the ANS range of 41,200–116,400 fish designated by the Alaska BOF, representing some of the poorest harvests on record.

“

On June 22, I caught only five chums; most people are catching five to ten. People are calling them ‘precious.’
Mike Williams Sr., Akiak (Akiak Native Community)

When I first came to Aniak in the 1960s, there were people who made their money off fur in the winter and fish in the summer; that's how they could buy a new outboard or net. They were able to do that because the chum salmon went up the Aniak valley to die. Elders talk about the stink up there, and the first year we had a sonar on the Aniak, we had a million chums up there; but no longer. We should think of chums as the sponsor of marine-derived nutrients and make sure we don't downplay this.

LaMont Albertson, Aniak

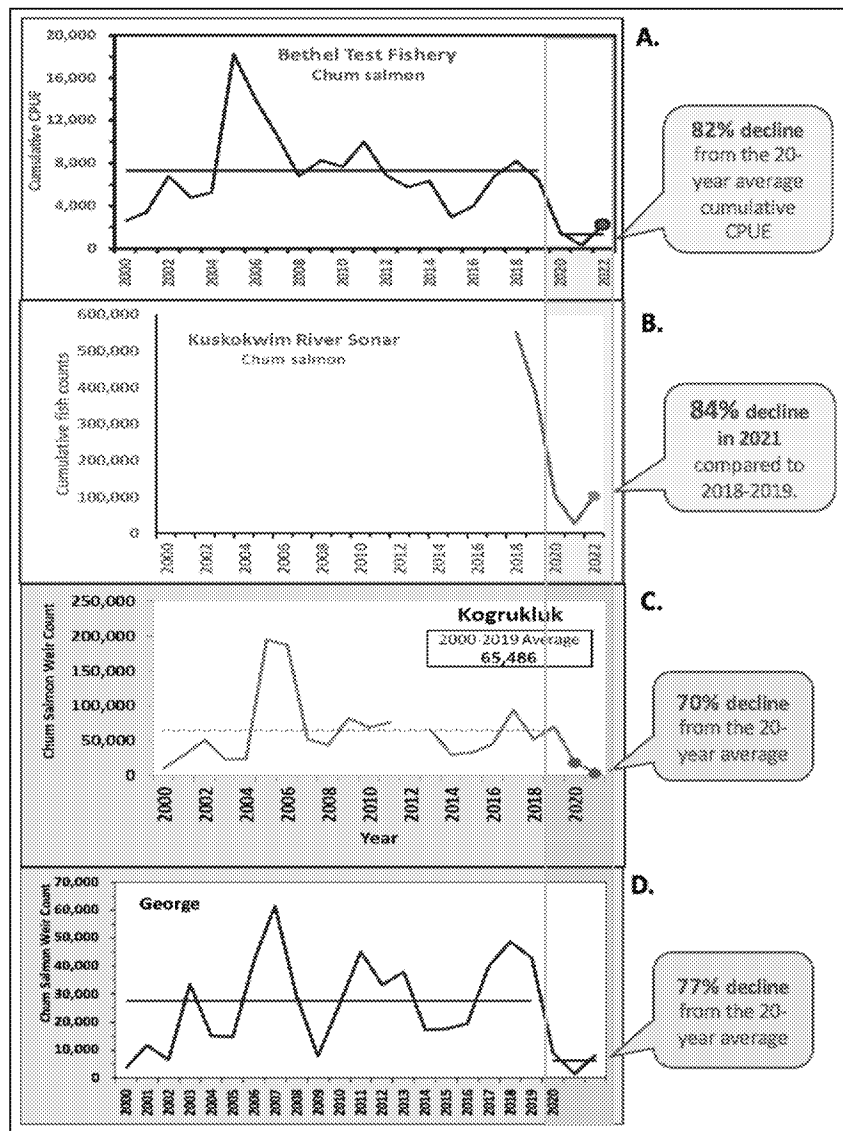


Figure 5: Evidence of low 2020 - 2022 Kuskokwim River chum salmon abundance:

- A. Cumulative end-of-season catch per unit effort (CPUE) of chum salmon caught in the Bethel Test Fishery, 2000-2022.
- B. Cumulative annual counts of chum salmon from the Kuskokwim River sonar project, 2018-2022.
- C. Kogrukuk river weir, 2000-2021.
- D. George River weir, 2000-2022.

Source: ADF&G AYK Database Management System.

Unprecedented Coho Salmon Crash (2022)

Coho salmon (silver salmon, *ciayuryaq*, *caayuryaq*, *uqurliq*, *qakiyyaq*, *nosdlagbe*, *O. kisutch*) are the last salmon species to return to the Kuskokwim each season. With the run beginning toward the end of July and continuing until ice covers the river, coho salmon provide Kuskokwim fishing communities with their final opportunities to meet their subsistence salmon needs.

In the past, Kuskokwim River coho salmon returns appeared to be highly productive, supporting both commercial and subsistence fisheries. During the 1990s, commercial harvests of coho salmon averaged around 460,000 fish per year, with a peak harvest of nearly 1 million coho salmon in 1996. However, this large commercial fishery was managed without a reliable in-season estimate of abundance or post-season run reconstruction, meaning there was no method for ADF&G managers to assess the long-term sustainability of this commercial fishery.

Unlike the commercial fishery, long-term coho salmon subsistence harvests until 2018 averaged and remained relatively stable around 35,000 fish. With ongoing Chinook and chum salmon declines, river-wide dependence on

coho salmon to meet subsistence needs is especially strong. Many families rely on coho salmon to fill their freezers, jar smoked strips, and taste the last fresh salmon of the season.

Available long-term run assessment data from the Bethel Test Fishery (BTF) show that the Kuskokwim River coho salmon run has declined significantly since 2018 (Figure 6), which corresponds with coho conservation concerns voiced by Kuskokwim residents in recent years at the State of Alaska’s advisory body, the Kuskokwim River Salmon Management Working Group. BTF cumulative coho salmon catch-per-unit-effort (CPUE) has dropped 54% in the past four years. As a result of these declines, the coho salmon ANS of 27,400–57,600 fish was not met in 2018, 2020, 2021, or 2022.

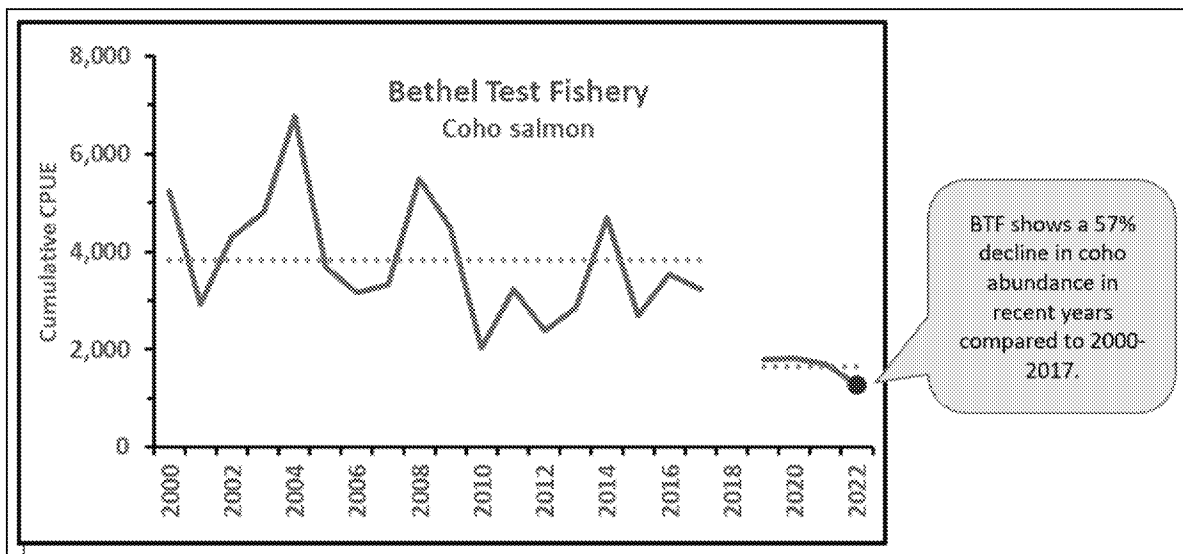


Figure 6: Cumulative end of season CPUE of coho salmon caught in the Bethel Test Fishery, 2000-2022, showing a steep decline in coho salmon runs for the past four years. The 2019–2022 average CCPUE was 57% below the 2000–2017 average. Source: ADF&G AYK Database Management System.

Despite recent years of steep coho salmon declines, ADF&G managers did not act until 2022, when they implemented a drainage-wide closure of the Kuskokwim from mid-August to mid-September to protect a record-low coho salmon return. This drainage wide closure effectively shut down all subsistence fishing, including the use of smaller-sized mesh nets targeting whitefish and the use of selective non-gillnet gear types, that resulted in severely harming subsistence communities by the lack of reasonable opportunity to harvest non-salmon species.

“

I’m really saddened and devastated for our Tribal families upriver who haven’t had a chance to catch Chinook or chum salmon, and we don’t get reds up here. Now there’s no silver fishing. The people that live a subsistence lifestyle up here are going to be hit really hard. It was open downriver, but the fish take two or more weeks to get upriver. By the time the silvers were up here this year, we were closed and couldn’t fish. It’s devastation up here.
Betty Magnuson, McGrath (McGrath Native Community)

Everybody is caught off-guard by the silvers. A lot of people upriver who were waiting for the silvers to arrive do not have any chance for that. With the closures, we also effectively have no access to the fall whitefish and any other fish that people need to put away for the winter.
Jonathan Samuelson, Georgetown (Native Village of Georgetown)

Commercial Intercept & Bycatch Impacts on Critically Declined Western Alaska Salmon Stocks

Many potential factors have cumulatively caused declines in Coastal Western Alaska (CWAK) salmon populations. Salmon bycatch and interception in marine fisheries, while not the sole driver of current poor salmon returns to the Kuskokwim, undeniably impacts salmon stocks in this region and is a driver that is directly under human control. However, unlike many drivers of declines, humans can directly and effectively influence salmon bycatch and intercept levels – a particularly crucial power during present-day collapses in subsistence salmon fisheries. Moreover, the 33 Tribes of the Kuskokwim River share Indigenous values associated with deep respect and gratitude for subsistence foods, and the excessive waste of bycaught salmon is deeply offensive to the Tribal stewardship principles practiced by the subsistence cultures in the watershed.

At A Glance: Impacts of Commercial Salmon Interception & Bycatch

- **Both the South Alaska Peninsula (Area M) salmon fishery and the Bering Sea pollock fishery** are documented contributors to the severe chum salmon crash impacting communities throughout the Coastal Western Alaska region.
- The most recent and rigorous genetic analysis of samples from these fisheries found an average of **57% of the Area M chum salmon catch in June** were of Coastal Western Alaska origin.
- **Huge numbers of chum salmon** bound for Western Alaska rivers were harvested in the Area M fishery in recent years. A combined total of **nearly 1 million Coastal Western Alaska chum salmon were harvested in the two-year period of 2021 to 2022** (Figures 7 & 9).
- **Chum bycatch** of Western Alaska stocks in the Bering Sea pollock fishery in 2021 was significant but smaller compared to the harvest in the Area M fishery. For comparison, in recent years the **Area M harvest of Coastal Western Alaska stocks has been 10 times larger** than the Bering Sea bycatch of those same stocks (Figure 7).
- **The South Alaska Peninsula fishery has profited** for more than 100 years off the sustained productivity of distant salmon stocks – especially the Yukon and Kuskokwim River chum salmon stocks, which were the most abundant stocks in the Coastal Western Alaska region prior to the current crash.
- There is **currently no limitation or cap on the number of Western Alaska chum salmon** that can be caught and sold in Area M or caught and discarded in Bering Sea pollock fishery, regardless of the impacts to spawner escapement or food security threats in the salmon's regions of origin.
- Fundamentally, both **state Area M harvest management and federal bycatch management are disconnected from** in-river stock assessments, escapement monitoring, and other best management practices to ensure sustainability of our Western Alaska salmon stocks that are harvested in these marine fisheries.
- Both state and federal policy declare that meeting salmon escapement goals and providing for subsistence uses are to be prioritized over commercial harvests. However, in practice, the current management regimes under **both North Pacific Fisheries Management Council and Alaska Board of Fisheries effectively prioritize commercial uses** over Western Alaska escapement needs or subsistence uses. For example, in 2021, when chum salmon harvests were severely restricted on the Kuskokwim and not allowed on the Yukon, **over 740,000 Western Alaska chum were legally caught** between both the Area M fishery and the Bering Sea pollock fishery (Figure 7).

South Alaska Peninsula (Area M) Interception of Western Alaska Chum Salmon

The South Alaska Peninsula Management Area, more commonly known as a portion of Area M, neighbors the Chignik and Bristol Bay areas along the Alaska Peninsula and eastern Aleutian Islands (Figure 8). Managed by ADF&G, Area M is an intercept fishery that has operated since at least the early 1900's targeting all salmon species as they pass through the fishery.

Arctic-Yukon-Kuskokwim (AYK) region immature chum salmon stocks travel to the Gulf of Alaska and North Pacific to rear and mature. As the salmon begin to mature in late winter and spring and migrate to their natal rivers to spawn, they must travel through the island passes at the end of the Alaska Peninsula (Figure 8). The Area M fishery is located in these island passes, which create natural bottlenecks, concentrating chum salmon stocks and making them more vulnerable to commercial fishing interception. Unlike salmon bycatch in pollock fisheries of the Bering Sea, where salmon are designated as a prohibited species that cannot be sold, harvesters in Area M can catch and sell as many salmon as possible during the ADF&G managed openings, regardless of where these salmon originate.

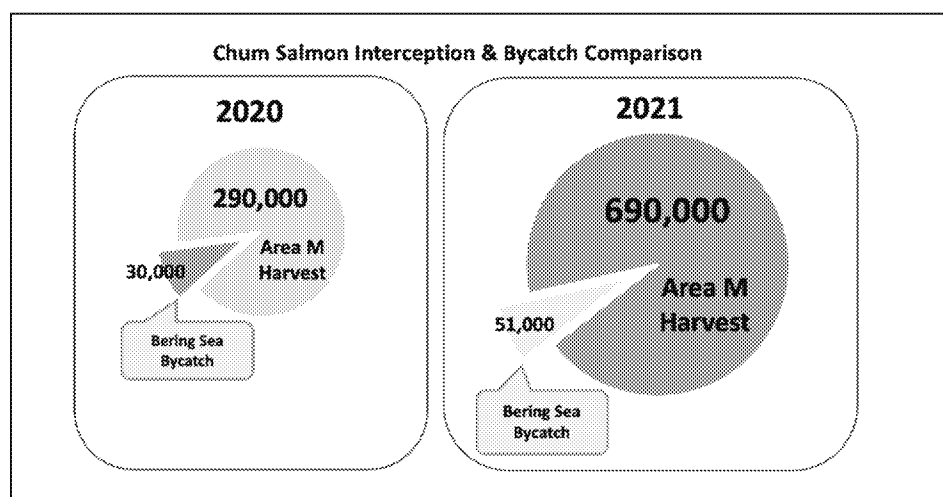


Figure 7: Catch of chum salmon from Coastal Western Alaska and the Middle- and Upper-Yukon in the BSAI pollock fishery (small pie slice) and the Area M South Alaska Peninsula salmon fisheries (remaining portion of pie) in 2020–2021. Stock composition source: Seeb and Crane (1999) and Foster and Dann (2022).

Districts in the South Alaska Peninsula – specifically the commercial fisheries in the South Unimak and Shumagin Islands – are a primary concern to Yukon and Kuskokwim subsistence harvesters. During the month of June, commercial fishing vessels in these Area M districts intercept and sell large numbers of chum salmon bound for the AYK region (Figure 8).

For decades, fishermen from the Kuskokwim and other AYK rivers have urged the Alaska BOF and ADF&G to manage the South Unimak and Shumagin Islands June fishery to avoid intercepting AYK-bound salmon. A previous study (Seeb and Crane 1999) to explore genetic composition of South Alaska Peninsula resulted in a seasonal harvest cap which expired long ago. Continued public outcry led to the creation of the Western Alaska Salmon Stock Identification Program (WASSIP) to further identify the origin of stocks that the Area M fishery depends on.

The Coastal Western Alaska (CWAK) chum salmon genetic stock grouping includes the Kuskokwim, Yukon, Norton Sound, Kotzebue, and Bristol Bay regions, which, at this time, cannot be genetically differentiated. Based on genetic analysis of samples from the commercial salmon fishery in the South Alaska Peninsula during 2007–2009, WASSIP showed that CWAK stocks comprised an average of 57% (range 52%–60%) of the chum salmon harvested (Munro et al. 2012; Foster and Dann 2022; Figure 8). This agreed well with the average of 57% observed in June 1993–1994 by Seeb and Crane (1999; range 15%–72% over periods and years).

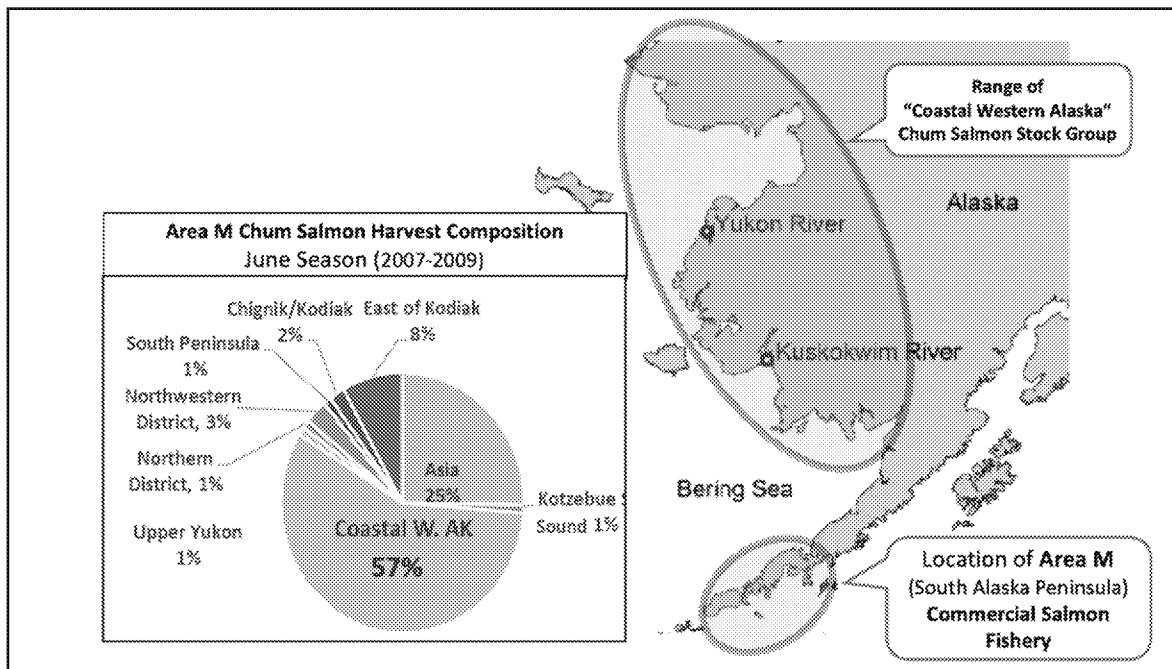


Figure 8: Map of South Alaska Peninsula intercept fishery with inset showing the average genetic composition of chum salmon caught in commercial fisheries there during June 2007–2009 as reported by WASSIP.
Source: Munro et al. 2012.

These independent studies, 14 years apart suggest considerable stability in the proportion of CWAK chum in the South Alaska Peninsula commercial intercept fishery during the period 1993-2007. The rationale for assuming CWAK chum salmon currently continue to comprise the majority of the Area M June chum harvest is based on the evidence that Kuskokwim salmon stocks, which rear in the Gulf of Alaska, must pass through the Area M region, making them highly vulnerable to harvest regardless of their total abundance.

WASSIP findings at the time showed that despite the large proportion of chum in the Area M fishery 2007–2009, the harvest rate on CWAK chum salmon was fairly small compared to total returns in their rivers of origin (Munro et al. 2012). With current declines in AYK rivers, the impact is clearly more pronounced. Based on our estimate of the likely number of CWAK chum salmon harvested in the commercial salmon fisheries during the month of June from 1980–2021 (Figure 9), the harvest of Kuskokwim and other AYK region chum salmon stocks in this intercept fishery in recent years has been massive.

In 2021 alone, an estimated 690,000 chum salmon bound for Western Alaska rivers were harvested in the June South Alaska Peninsula (Figures 7, 9). Between 2021 and 2022, a combined total of nearly 1 million CWAK chum salmon were harvested in this commercial fishery. For comparison, that is larger than the total combined estimated chum salmon returns in 2021 to both the Yukon *and* Kuskokwim Rivers.

“

Again, it's subsistence users as the ones trying to save them. Without my dog team, I don't take many fish. Some people want to put restrictions on commercial fishing for a bit so the fish come back, but they'll never stop commercial fishing in the ocean because it's called 'progress.' They say they feed the world. I always say, look what happened to the East Coast, West Coast, and now it's up here: There's no more fish. History repeats itself.

Robert Lekander, Bethel (Orutsarmiut Native Council)

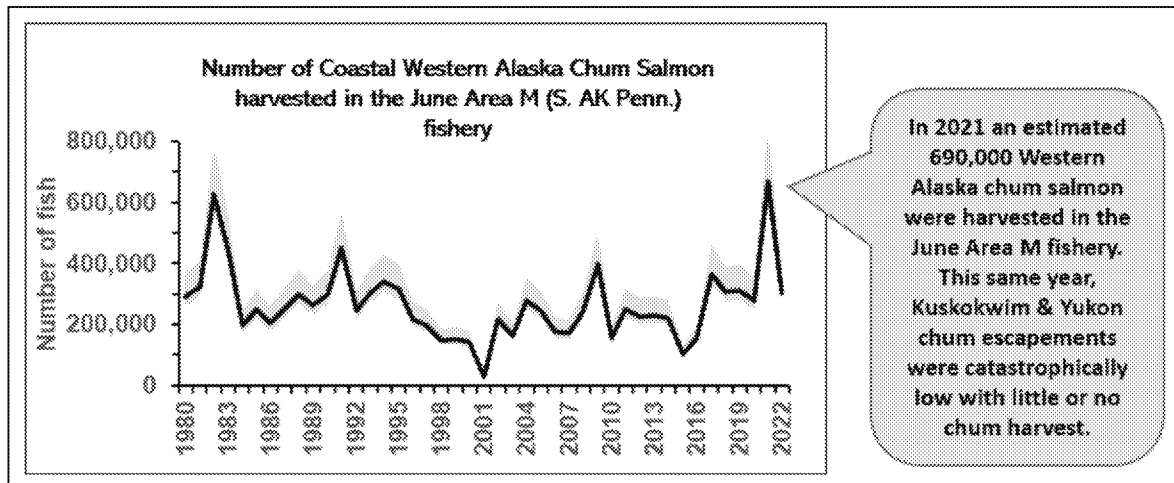


Figure 9: Estimates of the number of Coastal Western Alaska and Yukon River chum salmon harvested in the during the month of June 1980–2021. Data are derived from genetic analysis of chum salmon in the South Alaska Peninsula salmon fisheries sampled in 1993–1994 and in 2007–2009. The dotted line shows the mean estimate of (57% of all harvest), and the shaded area shows the plausible range (51%–72%). Source: Seeb and Crane 1999; Munro et al. 2012; Fox et al. 2022.

Bycatch of Western Alaska Chinook and Chum Salmon in the Bering Sea Pollock Fishery

Bycatch, or the unintended catch of one species while targeting another, also accelerates AYK region salmon declines, including on the Kuskokwim. In the Bering Sea–Aleutian Islands (BSAI) management area, the commercial pollock trawl fishery accounted for 99% and 87% of all 2021 chum and Chinook salmon bycatch, respectively (NOAA 2022). These salmon, many bound for the Yukon and Kuskokwim drainages, are not the target of the pollock fleet. Because of this, Chinook and chum salmon caught by the pollock fishery cannot be sold but must be discarded or donated.

The North Pacific Fishery Management Council (NPFMC) manages chum and Chinook salmon as prohibited species catch in Alaska, meaning they cannot be targeted or sold by federally managed commercial fisheries. In response to record-high chum and Chinook bycatch levels from 2003–2007, the NPFMC implemented Chinook salmon bycatch caps, based on prior year salmon returns to the Kuskokwim, Upper Yukon, and Unalakleet rivers, as well as salmon avoidance incentives for the commercial fleet.

The establishment and strict enforcement of bycatch caps and full observer coverage on-board vessels appear to be effective in significantly reducing Chinook bycatch in recent years. An estimated total of 126,104 Chinook salmon from CWAK rivers were caught as bycatch in the BSAI pollock trawl fishery 2011–2020 (annual average: 12,610 salmon). While there are no new genetic analyses of bycatch since 2020, as of September 29, 2022, over 7,600 Chinook salmon bound toward all genetic reporting regions have been caught as bycatch in 2022 directed BSAI commercial fisheries (NOAA 2022).

Nonetheless, CWAK Chinook stocks comprise the largest portion of Chinook salmon bycatch in the BSAI pollock fishery most years, especially during the A-season (January 20 to April). From 2011 to 2020, CWAK stocks averaged over 44% of the estimated Chinook salmon bycatch, and over 60% of bycatch in some years (Guthrie et al. 2022). From 2017 to 2020, the relative proportion of CWAK stocks caught in the pollock fishery increased from 24% to 52% of Chinook salmon bycatch (Figure 10).

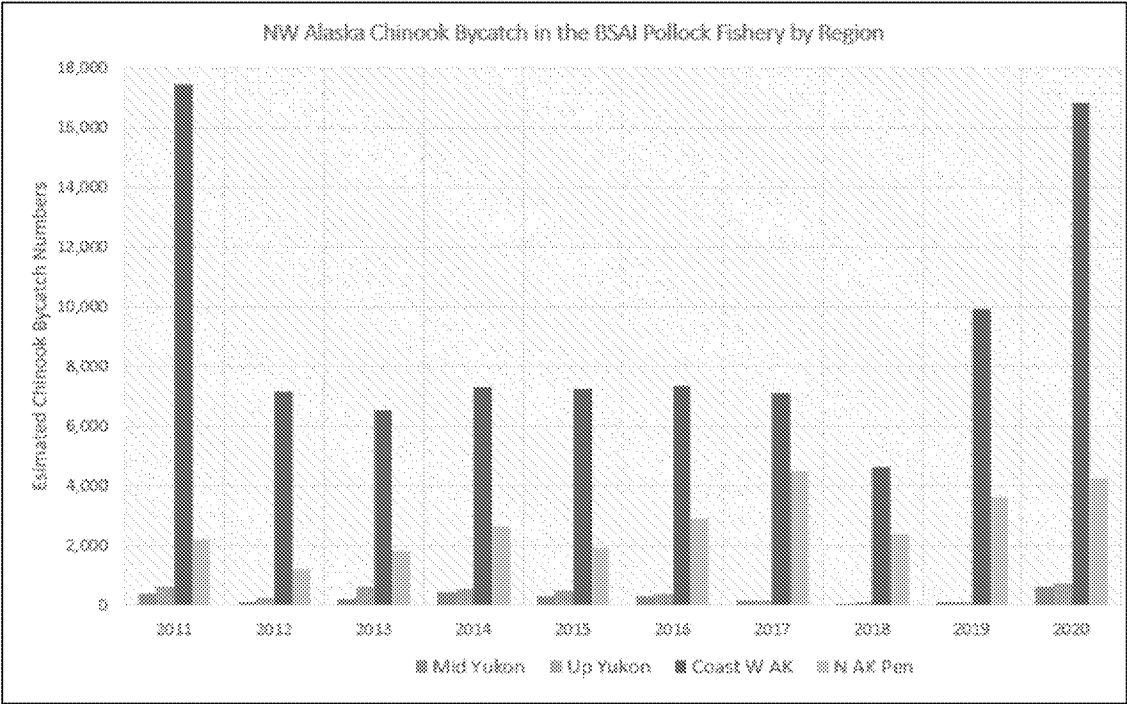


Figure 10: Estimated Chinook salmon bycatch numbers in the BSAI pollock fishery 2011–2020 by northwest Alaska region, with bars showing the origins of different regional stock groupings. Source: Guthrie et al. 2022.

Chum salmon bycatch in the Bering Sea, primarily occurring in the B-season (June 10 to November), increased dramatically after 2011 (Figure 10). The CWAK rivers accounted for approximately 9% of chum incidentally caught in the 2021 BSAI B-season pollock fishery, and an annual average of 37,423 salmon were caught as bycatch during 2011-2021 (Barry et al. 2022; P. Barry, NMFS, pers. com.).

Genetic analyses from recent years confirm that Western Alaska, Upper/Middle Yukon, and Southwest Alaska chum salmon stocks are impacted by pollock trawl bycatch annually. A very low proportion of Upper/Middle Yukon chum salmon were caught in BSAI B-season pollock fishery in 2020 and 2021, which may have been an early indicator that the Upper/Middle Yukon chum salmon are experiencing a decline in stock status. In-season data from 2022 shows over 242,000 chum salmon across all genetic reporting regions have been taken as bycatch through September 29, 2022 (NOAA 2022).

“

We need to look at both ends, from the beginning of the routes of the salmon to the headwaters spawning grounds. Are we conserving salmon for the people in the high seas fisheries and Alaska Peninsula fisheries that are intercepting our fish?

James Nicori, Kwethluk (Organized Village of Kwethluk)

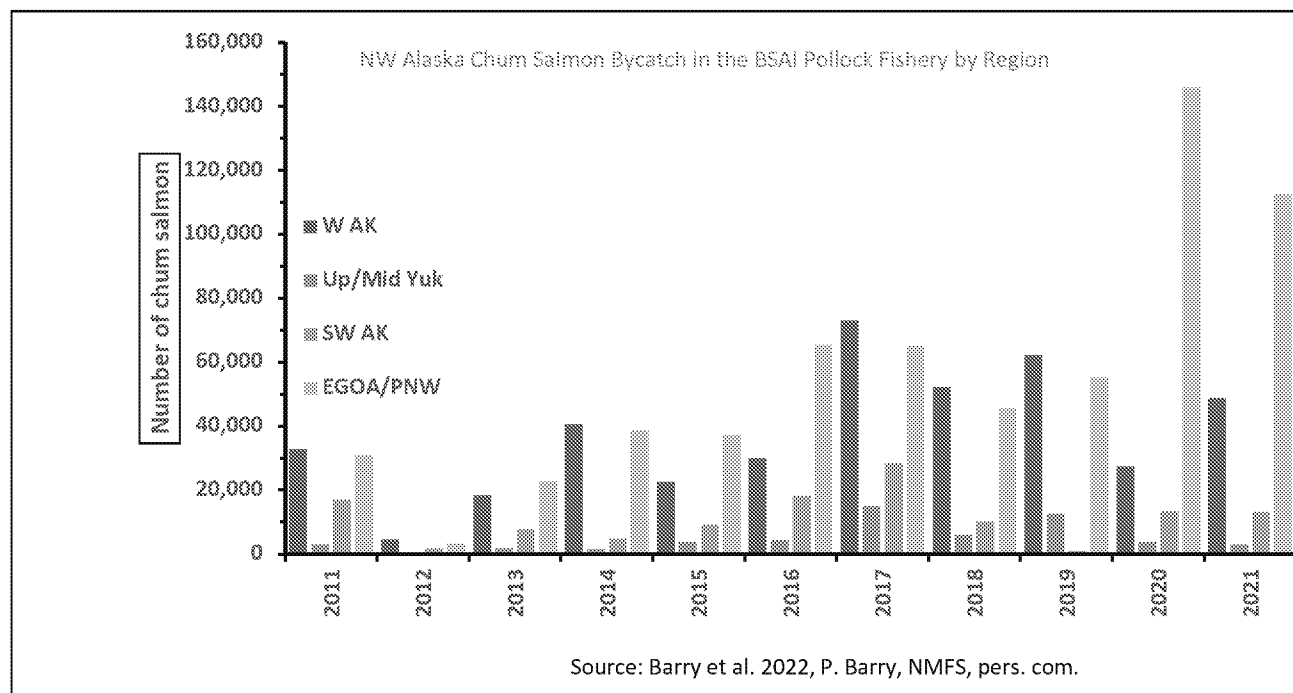


Figure 11: Estimated chum salmon bycatch in the BSAI pollock fishery, 2011–2021 showing bycatch composition by Eastern Pacific reporting group. Source: Barry et al. 2022; P. Barry, NMFS, Pers. com.)

Salmon Intercept and Bycatch Management Concerns

Given the combined impacts of the Area M intercept fishery and BSAI salmon bycatch on AYK chum salmon stocks, it is of grave concern that neither the Alaska BOF nor NPFMC have demonstrated any willingness in recent years to take action to limit the take of Western Alaska chum salmon in the fisheries they manage. Moreover, both state and federal agencies have fragmented systems and prioritize commercial fishery profit over meeting spawner escapement and subsistence harvest needs.

A root problem with NPFMC management of BSAI salmon bycatch and ADF&G management of the South Alaska Peninsula June chum salmon intercept fishery is their disconnection from Kuskokwim and Yukon rivers in-river stock assessments, escapement monitoring, and other best management practices to ensure sustainability of distant stocks that are harvested in this intercept fishery.

For example, ADF&G managers in the AYK region repeatedly claim that they have no authority nor obligation to coordinate with Area M managers to ensure that the Area M fishery is not overharvesting chum salmon stocks essential for escapement and subsistence uses within AYK rivers.

In the BSAI pollock fishery, there is currently no cap or limit on the amount of chum salmon that the pollock fleet can take as bycatch, despite sustained pressure from AYK region Tribes and subsistence users on NPFMC decisionmakers, most recently at the June 2022 NPFMC meeting.

Regulations written in the Alaska BOF policy and federal Alaska National Interest Lands Conservation Act (ANILCA) declare that meeting escapement needs and providing for subsistence uses are to be prioritized over commercial harvests in both state and federal fisheries. However, in practice, the current management regimes under both the Alaska BOF and NPFMC effectively prioritize commercial uses over Western Alaska salmon escapement needs or subsistence uses. For example, in 2021 – when Kuskokwim chum salmon harvests were

severely restricted and Yukon River communities were allowed no harvest opportunities for the entire season – over 740,000 Western Alaska chum salmon were legally caught between both the Area M fishery and the Bering Sea pollock fishery (Figures 7 & 9).

Thus, while subsistence communities on the Kuskokwim and throughout the AYK region are forced to sacrifice their local harvests to help meet escapement goals essential for sustainable salmon management and stock rebuilding, state and federal managers are prioritizing commercial yield and profit. ADF&G and the Alaska BOF solely focus on allocating and managing the commercial harvest among different subdistricts in Area M; meanwhile, escapement and subsistence needs in AYK rivers that have produced the majority of the salmon intercepted in this lucrative fishery for over 100 years are disregarded by Area M managers. BSAI pollock fishing vessels have no mandates to avoid chum salmon bycatch and the NPFMC continues to manage their fishery with a single-species, profit-driven lens.

Essentially, there is no sharing of the conservation burden as downstream harvesters in Area M and marine vessels in the BSAI are focused on maximizing harvest and profits while in-river subsistence harvesters face restrictions to meet escapement goals.

Moving Forward: The Necessity of Collective Conservation & Restoration Efforts

The Kuskokwim River watershed is facing a food security and ecological crisis, given the river-wide declines in Chinook, chum, and coho salmon. This crisis, brought on by the cumulative effects of cross-regional overharvest, unsustainable management, climate change, and other factors, threatens a total collapse of our ecosystem and Indigenous way of life.

Local subsistence users are currently the only users bearing the brunt of conservation and supporting salmon stock rebuilding efforts. Unfortunately, conservation in a mixed-stock fishery means that Alaska Native subsistence users – who rely on salmon for our physical, spiritual, cultural, and economic wellbeing – are unable to fish for healthy runs of sockeye salmon or non-salmon species like whitefish while protecting species of concern.

In-river harvest restrictions imposed upon traditional and customary harvesters of these fish should be a last resort for managers, yet they are currently the only real conservation efforts in place. Salmon originating in the Kuskokwim drainage migrate through many other jurisdictional boundaries during their lifetimes, but instead of approaching salmon conservation from a cross-boundary, ecosystem-centered perspective, agencies maintain management divisions and restrict the fishing communities who depend on salmon to thrive – and who continue to steward the spawning grounds as they have since time immemorial.

Rebuilding and carefully stewarding our salmon runs throughout their lifecycle through co-management, conservation, and community-based monitoring remains our goal. This is critical as the effects of this crisis are not isolated to the Kuskokwim Region. The sustainability, health, and productivity of Alaska’s fisheries, like Area M and the Bering Sea, depend on the careful management of populations elsewhere. It is imperative for all harvesters, managers, executives, and agencies, whether in or out of the Kuskokwim region, to contribute to Western Alaska salmon restoration efforts. Only our collective efforts can halt the decline of our subsistence fisheries that are critical to the wellbeing of this ecosystem and our way of life.

“

I’m worried about the farther-up people, those upriver, who wait around to catch their fish. They don’t meet their needs, and sometimes I think, How can we help the upper river people get fish?

*Ralph Nelson, Napakiak
(Native Village of Napakiak)*

Some people still get fish and hang them, but it seems like the subsistence way of life is dying. There used to be a lot of fish camps, but now they’re run-down, hardly anybody there. Some families sold their property. It’s sad. These people gave up their fish camps. The new generations fish less.

*Paul Cleveland, Quinhagak
(Native Village of Kwinhagak)*

We can’t give up. We’ve got to work together, remember where we came from, help each other, and help our people to work together.

*James Nicori, Kwethluk
(Organized Village of Kwethluk)*

Literature Cited

Alaska Department of Fish & Game. 2020. The Chinook Salmon Research Initiative and Alaska's Subsistence Fisheries: What Did We Learn? Alaska Department of Fish and Game Division of Subsistence, Anchorage.

Alaska Department of Fish & Game. 2022. Inseason Commercial Harvest Estimates: Alaska Peninsula Inseason Commercial Harvest Estimates. Alaska Department of Fish and Game Division of Commercial Fisheries, Anchorage. Database available at <https://www.adfg.alaska.gov/index.cfm?adfg=commercialbyareaakpeninsula.salmonharvestsummary>.

Barry, P. C. Kondzela, J. Whittle, J. Watson, K. Karpan, K. D'Amelio, and W. Larson. 2022. Genetic stock composition analysis of chum salmon from the prohibited species catch of the 2021 Bering Sea walleye pollock trawl fishery. Report to the North Pacific Fisheries Management Council. Auke Bay Laboratories, Alaska Fisheries Science Center, National Marine Fisheries Service, National Oceanic and Atmospheric Administration, Juneau. Available at <https://meetings.npfmc.org/CommentReview/DownloadFile?p=247bfc4c-d7cd-4030-82ef-db503fbc342.pdf&fileName=D1b%20BS%20Chum%20Salmon%20Bycatch%20Genetics%20Report%202021.pdf>.

Fall, J. A., C. Brown, N. Braem, J.J. Simon, W.E. Simeone, D.L. Holen, L. Naves, L. Hutchinson-Scarborough, T. Lemons, and T.M. Krieg. 2011, revised. Alaska subsistence salmon fisheries 2008 annual report. Alaska Department of Fish and Game Division of Subsistence, Technical Paper No. 359, Anchorage.

Foster, M. B., and T. H. Dann. 2022. Genetic stock composition of chum salmon harvested in commercial salmon fisheries of the South Alaska Peninsula, 2022-2026. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Operational Plan No. ROP.CF.4K.2022.02, Anchorage.

Fox, E. K. C, T. D. Lawson, and R. L. Renick. 2022. 2021 South Alaska Peninsula salmon annual management report and 2020 subsistence fisheries in the Alaska Peninsula, Aleutian Islands, and Atka-Amlia Islands management areas. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report No. 4K22-01, Anchorage.

Guthrie III, C. M., Hv. T. Nguyen, K. D'Amelio, K. Karpan, P. D. Barry, and W. A. Larson. 2022. Genetic stock composition analysis of Chinook salmon (*Oncorhynchus tshawytscha*) bycatch samples from the 2020 Bering Sea pollock trawl fishery. Report to North Pacific Fishery Management Council. Auke Bay Laboratories, Alaska Fisheries Science Center, National Marine Fisheries Service, National Oceanic and Atmospheric Administration, Juneau. Available at <https://meetings.npfmc.org/CommentReview/DownloadFile?p=38f9b0d4-52be-4718-8dc7-d837d1be531c.pdf&fileName=D1b%20Bering%20Sea%20Chinook%20Genetics%202020.pdf>.

Ikuta, H., A.R. Brenner, and A. Godduhn. 2013. Socioeconomic patterns in subsistence salmon fisheries: historical and contemporary trends in five Kuskokwim River communities and overview of the 2012 season. Alaska Department of Fish and Game, Division of Subsistence, Technical Paper No. 382, Fairbanks.

Munro, A. R., C. Habicht, T. H. Dann, D. M. Eggers, W. D. Templin, M. J. Witteveen, T. T. Baker, K. G. Howard, J. R. Jasper, S. D. R. Olive, H. L. Liller, E. L. Chenoweth, and E. C. Volk. 2012. Harvest and harvest rates of chum salmon stocks in fisheries of the Western Alaska Salmon Stock Identification Program (WASSIP), 2007-2009. Alaska Department of Fish and Game, Division of Sport Fish and Commercial Fisheries, Special Publication No. 12-25, Anchorage. Available at <https://www.adfg.alaska.gov/FedAidpdfs/sp12-25.pdf>.

NOAA Fisheries. 2022. Fisheries catch and landing reports in Alaska. Database. National Marine Fisheries Service, National Oceanic and Atmospheric Administration, Juneau. Available at <https://www.fisheries.noaa.gov/alaska/commercial-fishing/fisheries-catch-and-landings-reports-alaska#groundfish>.

Ohlberger, J., E. J. Ward, D. E. Schindler, B. Lewis. 2018. Demographic changes in Chinook salmon across the Northeast Pacific Ocean. *Fish and Fisheries* 19:533-546. Available at <https://doi.org/10.1111/faf.12272>.

Rabung, S. 2022. Three-system index letter from ADF&G Director of Commercial Fisheries to NOAA Fisheries Alaska Region, September 22, 2022.

Seeb, L.W., and P.A. Crane. 1999. Allozymes and mitochondrial DNA discriminate Asian and North American populations of chum salmon in mixed-stock fisheries along the south coast of the Alaska Peninsula. *Trans. Am. Fish. Soc.* 128:88–103.

Simon, J., T. Krauthoefer, D. Koster, and D. Caylor. 2007. Subsistence salmon harvest monitoring report, Kuskokwim Fisheries Management Area, Alaska, 2004. Alaska Department of Fish and Game, Division of Subsistence Technical Paper No. 313. Juneau.

Templin, W. D., N. A. DeCovich, S. D. Rogers Olive, H. L. Liller, E. K. C. Fox, J. R. Jasper, M. J. Witteveen, T. T. Baker, K. G. Howard, A. R. Munro, E. C. Volk, and C. Habicht. 2012. Stock composition of chum salmon harvests in fisheries of the Western Alaska Salmon Stock Identification Program (WASSIP), 2007-2009. Alaska Department of Fish and Game, Division of Sport Fish and Commercial Fisheries, Special Publication No. 12-23, Anchorage. Available at <https://www.adfg.alaska.gov/FedAidpdfs/sp12-23.pdf>.

Wolfe, R.J., and R.J. Walker. 1987. Subsistence economies in Alaska: productivity, geography, and developmental impacts. *Arctic Anthropology* 24:56-81.

Wolfe, R.J., G. Knapp, W.R. Bechtol, D. Andersen, and C. Scott. 2011. Salmon harvests to the year 2050: a predictive model for the Yukon, Kuskokwim, and Norton Sound drainages in Alaska. Submitted to the Bering Sea Fishermen's Association on behalf of the Arctic-Yukon-Kuskokwim Sustainable Salmon Initiative, Project Final Product.